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AN

INAUGURAL DISSERTATION

ON

Gangrene and Mortification,

SUBMITTED TO THE EXAMINATION OF

THE REV. JOHN EWING, S. T. P. PROVOST;

THE

Truſtees and Medical Faculty of the Univerſity of Pennſylvania,

ON THE 12TH DAY OF MAY, 1797.

For the Degree of Doctor of Medicine.

BY FRANCIS K. HUGER,

OF SOUTH CAROLINA.

——— Ut ſi
Cœcus iter monſtrare velit. HOR

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TO

PHILIP S. PHYSICK, M. D.

One of the Phyſicians of the Pennſylvania Hoſpital,

THIS Diſſertation is inſcribed, as a ſmall tribute of reſpect for his talents, and as a mark of regard and eſteem; by his ſincere friend,

F. K. HUGER.

ON

Gangrene and Mortification.

IN writing a diſſertation purſuant to the rules of the Univerſity, I have ſenſibly felt how difficult it is to aſcertain what we really know, and how much is requiſite to be known before we can form an opinion, or venture to affirm a judgment. To one juſt finiſhing a courſe of medical education, the greater number of facts from which the principles of the ſcience are deduced reſt upon authority, and frequently his judgment reſts upon no better foundation. The opinions then advanced in the following diſſertation are to me only conjectures, and the concluſions drawn only probabilities.

Two motives have induced me to fix upon the ſubject of Gangrene and Mortification. Firſt, it appears to me that Mr. John Hunter's Experiments and opinions of Inflammation lead to a rational explanation of the diſeaſe; and, ſecondly, I have ſeen ſome

caſes which I think verify his theory. To this I may add, that deriving from Mr. Hunter the earlieſt ideas of my profeſſion, in treating a ſubject elucidated by him, I feel gratified in paying a public tribute of admiration to his genius, and of reſpect to his memory; and while I offer this diſſertation as a proof to the Truſtees and Profeſſors I have not miſpent my time, I feel animated with the hope that in following his ideas I may be led to the purſuit of truth.

We find Gangrene very early taken notice of by the ancients. It ſeems difficult however to form a clear idea of their opinion of this diſeaſe. Hippocrates ſpeaks of a ſphacelus of the brain, which he ſays very few get over *. Galen defines a Gangrene, "when a part from violent inflammation is not "abſolutely dead but about to die†." Celſus appears to uſe the terms Cancer and Gangrene indifferently‡.

The moderns have more diligently inveſtigated this ſubject.

The thirſt of knowledge and ſpirit of inquiry which have ſo eminently promoted the improvment of ſcience in general for the laſt century, have had

* De Morb. Lib. 1. Cap. 7. † Æginita, Lib. 4. Cap. 19.
‡ Celſus, Lib. 6. Cap. 26.

conſiderable influence on the ſcience of medicine. Modern Phyſicians appear to have inveſtigated with unremitting ardour the cauſes of the effects they obſerved, and have been unwilling to admit any mode of practice which was not founded on reaſoning as well as obſervation. The frequent difficulty however of aſcertaining the different operations of the human machine, has led men of ingenuity and of warm imagination to ſubſtitute ſuppoſitions for what they could not eſtabliſh, and upon ſuch uncertain data they have formed theories, which by their novelty or brilliancy have attracted attention and commanded admiration. Hence medicine became as much a ſcience of the imagination as of reaſoning, and the different ſyſtems which have ſucceſſively been in vogue and exploded prove the uncertain foundation on which they were built. Nevertheleſs, in theſe inveſtigations many facts have been brought to light, and many important obſervations made, and in aſcertaining the fallacy of preceding conjectures they have facilitated the future progreſs of the ſcience.

Theſe reflections naturally ſuggeſt themſelves on viewing the opinions entertained of Gangrene and Mortification by modern authors, and the mode of treatment they recommend.

In their inveſtigations on this ſubject, they appear to have conſidered the living animal machine as

compoſed of matter in a ſtate for chemical inquiry, and to have totally overlooked that property which every animal poſſeſſes ſo long as it is alive of taking on peculiar actions from the application of ſtimuli, and which is abſolutely incompatible with the changes they ſuppoſed.

They have uniformly concluded that the fluids circulating in the human body were capable of becoming highly acrimonious, and the body itſelf of being eroded by theſe humours *; that ſtagnation produced putrefaction, and that putrefaction deſtroyed †. To counteract this it has been adviſed "to prevent the return of putrid matter into the "veins by increaſing the motion of the blood ad "extra ‡;" to evacuate the acrid humours by ſcarifications ſo as "to form outlets by which the "corrupted humours may be expelled from within, "and a paſſage given to remedies which correct the "preſent putrefaction and prevent the future §." Thoſe remedies are ſuch as "by preſerving or as it "were pickling the parts they may reſiſt a putrid "ſtate ‖." Among theſe are ſalt, vinegar, and

* Boerhaave. Aph. 423. Queſnay. Taité de la Gangrene. Cullen's Firſt Lines, cclii.

† Van Swieten's Com. Sect. 423. Queſnay. Cullen's Firſt Lines, cclv.

‡ Boerhaave. Aph. 435. § Van Swieten's Com. Sect. 435.

‖ Boerhaave. Aph. 437.

wine, " becauſe beef is preſerved with ſalt, and " boar's fleſh in Germany with wine *." They have taken for granted that the vital powers were either impaired or were languid and inactive, and recommend to increaſe the motion of the blood, and " to " rouſe and animate the languid and almoſt extin- " guiſhed vital principle †." Aromatic ſubſtances were thought eminently congenial to life; " that the " ſubtle and fragrant parts paſs immediately with the " venal blood into the heart, and from thence by " the arteries are diſtributed throughout the body. " Hence a ſudden refreſhment or increaſe of ſtrength " follows, inaſmuch as the ſpirits and powers of the " heart are excited by theſe moſt grateful ſtimuli ‡." Obſerving alſo that a mortified part was in ſome caſes ſpontaneouſly ſeparated from the living, and that this operation was attended with ſome inflammation, it was concluded that a conſiderable flow of blood was neceſſary to effect it, and hence cupping glaſſes were thought of uſe " to increaſe the quantity and " impetus of the vital humours, and thus the fibres " which connect the gangrenous with the ſound part " are at the ſame time diſſolved ſo as to procure a " ſeparation of them §."

* Van Swieten's Commentaries, Sect. 438.

† Queſnay, Traité de la Gangrene. ‡ Van Swieten, Com.

§ Van Swieten's Commentaries, Sect. 435.

It appears ſufficient to have noticed theſe prevailing opinions, without entering into a particular examination of them. The imagined conſequences of ſtagnation are now known to be erroneous, and the putrefaction of the blood in the living animal has been diſproved*. The formation of pus and its properties, the removal of parts of the body by inherent powers totally independent of chemical or mechanical cauſes, have been ſufficiently explained and illuſtrated in a very late publication†.

It was obſerved that living matter poſſeſſed properties which eſſentially diſtinguiſhed it from matter in a ſtate for chemical inquiry, and upon which all the actions of a living animal depend. To this eſſential property of living matter we can alone attribute the actions of an animal in health; and as indeed every effect which takes place in living matter ſeems to depend upon it, we muſt attribute to it alſo the actions of an animal in diſeaſe.

The animal machine is compoſed of a variety of different parts all tending to the ſame ultimate effect, the preſervation and continuation of the machine. To produce this there muſt be a ſucceſſion of actions, the preceding being the cauſe of a ſucceeding one. Action is either healthy, diſordered, or diſeaſed.

* Seybert's Inaugural Diſſertation, 1793, Philadelphia.

† Treatiſe on the Blood and Inflammation, by John Hunter.

Healthy action is the perfect and easy performance of the functions of the machine. Disordered action, is an action of restoration tending to remove or counteract whatever impedes healthy action. Diseased action tends always to destroy the animal machine. Hence Inflammation which arises from a simple injury, being an operation to answer some good purpose is not considered as a disease, though it frequently produces derangement in the animal œconomy.

The discrimination made by many authors between Gangrene, and Sphacelus or mortification, does not appear to me clear, as it cannot be accurately ascertained when Gangrene terminates or mortification commences. They uniformly have been regarded as different stages of the same disease; but as no advantage appears to arise from a division of this nature in the view I take of the subject, I beg leave to consider them as synonymous.

For the support of the animal machine, it is absolutely necessary that successive changes of fresh blood be carried to its different parts. If the circulation is cut off, and the part deprived of this support, it will lose all sensation and action, and be separated from the rest of the body. This effect is so universally known, that we see barbarous and uncivilized peo-

ple availing themſelves of it. The women of New Holland have a cuſtom of removing the firſt joint of their little finger by tying a hair tight round it.—A tumour preſſing on an artery, has been known to produce the ſame effect*.—Great violence frequently deſtroys all ſenſation and action, and is followed by loſs of the part.—Intenſe cold alſo produces the ſame effect. The noſe, ears, and fingers of the inhabitants of northern nations, are ſometimes loſt in this way. This total extinction of ſenſation and action in a part, may be conſidered as death of the part, and is what I underſtand by Gangrene or Mortification.

It has been long known that there is a ſyſtem of veſſels in the human body called abſorbents, which take up nouriſhment from our food, abſorb fluids extravaſated in the body, and ſometimes produce a waſting of the animal itſelf. It ſeems alſo aſcertained, that they have a power of removing bone and parts of the body which are no longer neceſſary, and that their operations and uſes are very conſiderable, and very important in the animal œconomy.

When a part then is dead or mortified, it affects the ſurrounding ſubſtance as an extraneous body, giving an irritation which excites an action in the

* Hildanus de Gangrena. Cap. 113.

abſorbents to get rid of it. The firſt effect of the irritation is a ſlight inflammation, and ſoon after follows a breach of continuity with irregular edges moiſtened with a thin fluid diſcharge. This goes on till all the dead part is detached, which falls off and leaves a ſore or ulcer. Another intention is now to be fulfilled, the reſtoration of the part deſtroyed. Other operations or actions therefore take place. Inflammation continues, ſuppuration is produced, or a particular fluid is formed called pus, which appears to be a leading ſtep to the formation of new parts called granulations. So that pus far from detaching a dead part either mechanically, by diſſolution, or by corroſion, ſeems to precede the formation of a new one; and that it does not poſſeſs the properties which have been generally attributed to it, has been proved by a ſeries of experiments to aſcertain that point*. It does not indeed appear any way acceſſory to the removal of parts, very frequently no pus being formed, and when there is, it would ſeem to be from the healing and ulcerative proceſs going on in the ſame ſore at the ſame time.

When therefore a dead part is removed and an ulcer formed, little more is to be done than not to interfere with the proceſs of reſtoration when that

* Home on the Properties of Pus.

goes on readily. It ſometimes however happens that the abſorption of the living part or ulceration continues. The treatment in this caſe will be taken notice of when we mention the treatment of what is next to be conſidered, Mortification preceded by Inflammation.

The different parts of which an animal is compoſed have very different powers of growth, and poſſeſs different capacities of action in health and in diſeaſe. The bones are more eaſily deſtroyed than the ſoft parts, and in their operations of reſtoration are much ſlower. Tendons and ligaments are more eaſily deſtroyed and more ſlowly repaired than muſcle. Upon the whole, it would appear that the capacity of action of a part is in proportion to the number of blood-veſſels it contains. Situation alſo has ſome influence, for it is obſerved, that the actions of ſimilar parts go on leſs actively at the extremities than near the ſource of circulation. Hence, parts having little blood, or at the extremities being leſs capable of going through the actions of reſtoration, are more readily deſtroyed in conſequence of injuries. For when inflammation takes place and proceeds to a conſiderable height, the action may be ſo violent as to exhauſt the power of the part and thus produce death. The firſt appearance of this effect is the

inflammation becoming of a watery kind, and having in ſome degree a determined edge. Then livid ſpots appear with conſiderable veſication, containing a bloody fluid. There is at the ſame time great pain, ſimilar to that of burning. The part firſt affected becomes perfectly black, and is thrown off in the form of a ſlough, leaving an ulcer. All theſe appearances advance in progreſſion, which Celſus has very accurately and conciſely deſcribed. "Ulcus in locum "puſtuloſum, puſtulæ in eum qui pallet aut livet, "pallor aut livor in id quod inflammatum eſt, inflam- "matio in id quod integrum eſt tranſit*."

If it be true that mortification is a conſequence of actions, being excited in a part ſo violent as to exhauſt the principle on which action depends, the common treatment in ſuch caſes muſt appear injudicious. This ſeems to have conſiſted in adminiſtering medicines termed tonics, and cordials to remove the debility, and in applying the moſt ſtimulating and ſometimes corroding ſubſtances to rouſe the living part or get rid of what was dead; all which is adding ſtimulus upon ſtimulus to parts already weakened by having been made to act to the full ſtretch of their capability. The conſequence of ſuch treatment may be eaſily conceived; the principle of action of the part muſt

* De Med. Lib. v. Cap. 26.

be diminiſhed by degrees, and at laſt totally annihilated, and the diſorder muſt ſpread with rapid progreſs. I have myſelf ſeen inſtances of parts of the body probably loſt in this manner, and the candour of ſeveral Phyſicians afford caſes of their failure when they have followed ſuch a practice. Theſe become leſſons of the moſt inſtructive kind, and I ſhall ſelect from Mr. La Motte, a very marked and ſtriking caſe. A woman who had been long ſick was attacked with a gangrene near the os coccygis. I made, ſays Mr. La Motte, ſome ſlight ſcarifications with a view to ſtop its progreſs. The gangrene nevertheleſs ſpread daily, although I repeated the ſcarifications in proportion, even made a conſiderable inciſion round the circumference of the gangrene, and bathed the parts with a decoction compoſed of two ſpecies of the ariſtolochia, myrrh, aloes, white wine, ſugar and brandy, applying to the part a plaſter of ſtyrax, and a compreſs ſteeped in aromatic wine. Theſe attentions which apparently ſhould have relieved the patient, had no effect in retarding the progreſs of the gangrene, which ſpreading over the whole glutei muſcles, induced me to remove the fleſh in great quantity in order to ſeparate the dead from the living parts, as I had been taught to do by Mr. Petit, formerly Surgeon of the Hotel Dieu. This prevented the poor woman from ſupporting herſelf on

her back, and obliged her to turn a little to one ſide or the other. This increaſed the diſorder; for the change of poſition cauſed a mortification of the part preſſed, ſo that I was obliged to make more ſcarifications; which were ſo frequently repeated, that the os coccygis, the greater part of the ſacrum, the two trochanters, and a part of each ilium were entirely laid bare by the quantity of ſtinking and putrid fleſh which I removed, thinking myſelf obliged to do it with a view to imitate my inſtructor as nearly as I could on this occaſion. Nor did the lotion above mentioned, or the tinctures of aloes and myrrh more than the unguent. egyptiac. alone or diſſolved in brandy, which I made uſe of during the whole time the poor woman was in this miſerable ſtate, prove of any ſervice, as ſhe died denuded in the manner I have mentioned. It would be unjuſt not to add Mr. La Motte's reflection on this caſe. "It is not only, "ſays he, in the Hotel Dieu of Paris, that this impro- "per treatment prevails, but I have ſeen it practiced "in the country with as little ſucceſs. I may indeed "affirm, it is a fatal error which I have taken care "never to commit ſince *."

It would be eaſy to recite many inſtances where a ſimilar mode of treatment has failed, ſince ſcarcely an author has practiſed it without meeting caſes of

* Obſerv. 298, et ſuiv.

this kind. They have therefore almoſt all laid down exceptions to their general practice which have been the reſult of experience. It is upon facts correſponding to theſe, added to a more accurate knowledge and obſervation of the ſtructure and functions of the human body, that opinions are founded eſſentially differing from them. What they conſidered as exceptions to their doctrine, appear ſo numerous and general as to become in part the foundation of new doctrines, which poſſeſs the advantage of being ſupported by the obſervations of ancient as well as modern obſervers.

Some of their exceptions and cautions would almoſt apply as general rules, if the idea I have ſtated be juſt. Celſus ſays, "During the progreſs of the "diſorder, no medicines are to be adminiſtered which "excite the formation of pus *." Van Swieten himſelf, though ſuppoſing that a gangrened part is ſeperated by the pus, and that pus is formed by accelerating the circulation and by warm applications has theſe words: "No circumſtance more frequently "produces a gangrene than the application of ſuch "ſubſtances as by their ſtimulating acrimony increaſe "the motion in the part affected, and more eſpeci-"ally if the circulation be accelerated by the uſe of "ſimilar medecines internally given. To this cauſe

* De Med. Lib. v. Cap. 26.

" has been owing the fatal event often ſeen in " inflammatory diſeaſes, where the chemiſts have " thrown down ſuch plentiful doſes of their oily " volatile ſalts and other ſharp medicines of a ſimilar " nature under a pretence of extenuating; as alſo " from the outward applications which the ſurgeons " have made of ſpirit of ſal. ammon. alcohol, &c. to " ſuch parts as have been inflamed *."

This perfectly accords with the idea ſtated, that mortification ariſes from the powers of the part being inadequate to carry on the action excited. Van Swieten mentions alſo that Dr. Boerhaave prevented a mortification in the great toe of a magiſtrate from ſpreading for full ſix months by applications that kept it from putrefaction, and by recruiting the patients ſpirits with nouriſhing food and cordials. But when upon a conſultation with other Phyſicians, it was judged adviſeable by a majority of voices to attempt the ſeparation of the mortified part from the ſound by ſuppuration, and to this purpoſe ripening cataplaſms were applied, in three days time the mortification ran up as high as the thigh, and the patient gently expired a ſhort time after †.

Theſe facts and obſervations tend to corroborate the opinion I have advocated, and it appears ſome-

* Van Swieten's Com. Sect. 422.
† ibid. Sect. 426.

what extraordinary that ſubſtances which, if applied to a ſound and healthy part, would excite conſiderable inflammation ſhould be imagined to have ſalutary effects when applied to an inflamed part. We ſee however Mr. Queſnay recommending muriated quickſilver and muriated antimony for a gangrene, and Aymard, a celebrated ſurgeon, applying ſalt, vinegar, brandy, ung. egypt. and corroſive ſublimative mixed together. Theſe ſubſtances would doubtleſs excite violent inflammation in a ſound part, and frequently I believe cauſe mortification when applied to an inflamed part. Applications of this nature however are not uncommon, and under the name of cleanſing and digeſting foul ulcers, ſtill continue to torture the patient and increaſe the diſorder.

From the idea I have taken up of the cauſe of gangrene, the principal attention in the treatment ſhould be directed to regulate the powers and action of the conſtitution and part.

If in a perſon of a ſtrong and vigorous conſtitution a mortification ſupervene, the inflammation which precedes it may be ſo violent as to go on deſtroying the parts it affects; and if a ſeparation of the dead part has taken place, the actions of reſtoration may be more violently carried on than the new formed parts are able to ſupport.

In ſuch circumſtances all irritating applications are to be avoided, and we muſt endeavour to moderate the actions of the part. Preparations of lead have been found advantageous for this purpoſe. Mr. Hunter was of opinion that this metal produced a great degree of contraction in the veſſels, and was therefore calculated to counteract inflammation, and was of ſervice when there was great power in the part, but that it was injurious when there was little power, as, although it diminiſhed the action of inflammation, it weakened by the contraction it excited. I have ſeen the pain and irritation which attend a ſpreading mortification conſiderably abated by the local application of opium; either the powder or the tincture ſprinkled on a poultice, or the poultice made with a decoction of the white poppy. The moſt effectual means we have of abating violent action in a part, is by reducing the action of the whole ſyſtem. This is moſt ſpeedily done by blood-letting, by purges, and by depleting medicines in general; and we may keep the ſyſtem in this quieſcent ſtate by low diet. The good effect of ſuch a plan was exemplified in a caſe treated by my friend Dr. De Wees.—A young man of a ſtrong conſtitution was ſeized with a bilious remittent fever, which after fourteen days took on the form of typhus, for which

bark, wine, and bliſters were adminiſtered. On the 17th day from the firſt attack, Dr. De Wees was called in. The patients pulſe was quick, irregular, and tenſe, and the ſores occaſioned by the bliſters, were quite livid. The bark and wine were omitted, the patient was bled, purged, and all applications to the bliſtered parts were left off. The following day he was better; but his pulſe continuing tenſe, he was again bled, and purged with calomel and jalap. He continued to mend; the livid appearance from the bliſters had diſappeared, and the ſores were highly inflamed. He was once more bled; the fever left him a few days after; his ſores healed kindly, and he perfectly recovered. Here, from a ſtate of moſt violent action, by removing the irritating cauſe and lowering the ſyſtem, the actions of the part retrogaded firſt to that of great inflammation, and at length to that of inflammation ſimply neceſſary to reſtore the part.

If on the contrary gangrene takes place in a perſon whoſe ſtrength has been greatly lowered by previous diſeaſe, or impaired by particular modes of life or in one whoſe powers are diminiſhed by age, we muſt carefully avoid exciting in the part actions it would be unable to ſupport, and our principal object muſt be to give ſtrength and vigour to the ſyſtem. This is no leſs difficult than it is deſirable.

It does not appear to me that obſervations and experiments have yet aſcertained what are the ſubſtances calculated to produce excluſively this effect. Beſides, the power of converting matter into nouriſhment, and of acquiring ſtrength, depend upon operations of an animal which we have not under our command, and when the whole ſyſtem is deranged, the functions of digeſtion and nutrition partaking of the general derangement, leſs readily and properly perform their neceſſary office.

Of the medicines however recommended for this purpoſe, the Peruvian bark is the principal, and long and general experience ſeems to aſcertain with certainty, that it poſſeſſes ſome efficacious qualities to anſwer this intention. It undoubtedly appears to increaſe the ſtrength, without increaſing the action ſo much as many medicines given for the ſame purpoſe. It has been ſuppoſed to have more than ordinary powers in overcoming gangrene, but its extraordinary reputation has been probably owing to many equivocal caſes, which recovering when it was adminiſtered, the event has been attributed to the medicine, as almoſt univerſally is the caſe in all the diſeaſes whoſe cauſes and effects are imperfectly known. Mr. Queſnay informs us, that experiments in France have not confirmed the high opinion entertained of it in England. The preparations of iron

have alſo been recommended as giving ſtrength to the conſtitution, but their principal and evident effect is to increaſe greatly the action of the arterial ſyſtem, and according to the ideas ſtated of mortification may produce conſiderable injury, and are not at all likely to be of any ſervice. Cordials of every kind are very generally employed in caſes of gangrene. Mr. Hunter was of opinion that in ſuch caſes, they ſeemed to do harm by increaſing the action of the arterial ſyſtem without giving ſtrength. Many practitioners however of learning and experience maintain that wine is a very uſeful medicine, particularly in hot climates. It is probable I think, its good effects may greatly depend upon the habit which has been acquired of drinking it. Others on the contrary reprobate the practice altogether. Mr. Queſnay ſays, the unſucceſsful uſe of cordials is ſo ancient and ſo univerſal, that it is impoſſible not to be ſufficiently convinced by experience of their inefficacy.—Neverthelefs, for want of other remedies which have a better title to our confidence we continue to employ them, and we lament at the ſame time the fate of our patient, who is reduced to depend on ſo precarious a ſupport *.

* The analogy between the blood and the living ſolids, though admitted by many, is ſtill denied by ſome Phyſicians, among whom indeed are to be found ſuperior talents, penetration, and judgment.

We have ſaid that inflammation under certain circumſtances, was an action by which ſome good purpoſe was to be anſwered, but we have likewiſe endeavoured to ſhew that by its exceſs, death of the part affected took place.

Many facts however lead to a belief, that there are certain kinds of inflammation which deſtroy from ſome peculiar quality, as in the ſmall-pox, where the parts which inflame always die. From this peculiarity they have been termed ſpecific diſeaſes, as it referred them to certain ſubſtances which ſeem to

It is proved by the experience of Dr. Sydenham, and of thoſe who, like him, appear to have accurately obſerved the operations of the animal machine, that the violent action of the arterial ſyſtem in malignant diſorders, and alſo in diſorders not malignant, but which are treated by cordials, ſtimulating applications and heating medicines, produces a derangement in the blood, by which it is more readily effuſed, forming purple ſpots and livid eruptions, and by which it loſes the property of coagulating, on being drawn from the blood-veſſels, and of affording nouriſhment to the ſolids. Theſe circumſtances have been conſidered by ſome, as proofs of a putrid diatheſis prevailing in the living body; and this ſuppoſition, while it gave a name to the preceding diſorder, led to a mode of practice eſtabliſhed on as good a foundation as that of pickling and preſerving the the living ſolids. The alteration the blood undergoes, as well as the circumſtances which precede it, bear conſiderable analogy to gangrene of the ſolids. This analogy is preſented to the mind by the term "gangrenous ſtate of fever," which has been ſo expreſſively choſen by Dr. Ruſh, to deſignate this termination of violent action in the arterial ſyſtem.

give a peculiar irritation, or to excite a peculiar action in a living animal. There are other ſpecific inflammations familiar to us beſide the ſmall-pox, as the venereal diſeaſe the carbuncle, and the cancer, although the action of each is particularly modified. The inflammation in ſmall-pox for example, ceaſes after deſtroying the part where it began; in the venereal diſeaſe, it would contaminate and deſtroy almoſt every part of the body, had we not a medicine by which its ravages can be ſtopped and counteracted; the carbuncle affects particularly the ſkin and cellular membrane; the cancer attacks principally glandular parts, and propagates itſelf ſo effectually as certainly ſooner or later to extinguiſh life. The only remedy we know is to ſeparate the part affected from the reſt of the body; this at any rate is a dangerous, and too often a precarious relief. It is ſaid a citizen of Pennſylvania knows a cure for this diſeaſe; if true, humanity, patriotiſm, philanthropy, demand it ſhould no longer be a partial good.

Mortification ſometimes occurs from a ſpecific inflammation, which cannot be referred to either kind enumerated, and which requires a particular mode of treatment. The following caſe which I had an opportunity of attending myſelf, appears to me of this kind. A gentleman aged 30, enjoying generally good health, for two or three years

ſucceſſively had ſmall pimples break out on his face, which ſoon diſappeared. In the month of February after dancing, he perceived a ſmall pimple in his left groin. This increaſed in ſize, inflamed, but gave little pain. He applied to his Apothecary who treated it very lightly. A ſcab formed, which falling off left a ſore with an irregular edge and inflamed margin. He in March began the uſe of mercury both internally and externally, from a ſuppoſition it might be venereal, and the ſore mended ſo much that he expected it would get well. It however after ſome time became worſe. The mercury was uſed to ſalivation, and continued at intervals for five months, but the ſore having now ſpread conſiderably, he in Auguſt came to London to conſult Mr. Hunter. The extent of the ſore was from the ſpine of the os ilium to the tuberoſity of the iſchium, and from the groin to within two inches of the os ſacrum, being nearly circular. In the centre were ſeveral ſpots healed, but the circumference was irregular and ulcerating, with an inflamed border extending about the tenth of an inch beyond the ulcerating part. His health was conſiderably impaired.

The firſt idea taken up was that of allowing a ſcab to form, imagining the ſore underneath might heal; but although a thick black ſcab formed from

expoſure, it ſtill continued to ſpread. Powder of rhubarb and columba were ſucceſſively applied, but gave great pain and produced no advantage. Pitch, unguent. ſaturn. liniment. arcei, were alſo tried without ſucceſs. The ſore ſtill continued to ſpread, he loſt his appetite and became hectic. He was ordered the tincture of Peruvian bark with the acid elixir of vitriol, and occaſionally took an opium pill. Several ſores of different ſizes appeared in October on his face, head, and arms, having a thick black ſcab. The idea was now taken up, that this was a ſpecific inflammation which would continue to deſtroy all the parts it affected, and it was determined to remove with the lunar cauſtic the whole edge of the ſore, that all the diſeaſed part being ſeparated, a new action that of reſtoration might take place. This was done with very good effect, ſome parts yielding in four or five days and putting on a healthy granulating appearance, others not for ſeven or eight, and ſome even required the application of the cauſtic for a fortnight regularly. His health was much mended from the uſe of bark, but he remained ſtill low and weak, and as the diſpoſition to form theſe ſores ſtill continued, for there were ſeveral on his arms and head, cicuta was ordered, and a cicuta poultice was applied to a ſore on his arm. The medicine in a few days affected his head, and he

complained of giddineſs and pain attacking him ſuddenly. The ſore on his arm becoming worſe, cauſtic was applied to the edges of it, which in three days put on a healthy appearance. In the beginning of November, he was ſo much recovered as to be able to take exerciſe in a carriage. The ſores were dreſſed with a weak ſolution of lunar cauſtic, under which they healed conſiderably. The unguent. citrin. was then applied, and he was ſo well as to return above one hundred miles into the country in the middle of November.

In this caſe it appears evident, that from the quantity and length of time mercury was adminiſtered, it could not cure this diſeaſe. It would alſo ſeem that the recovery in ſome degree of his health and ſtrength from the bark, was incapable of ſtopping the progreſs of the ſore, and the cicuta appears to have been totally inefficacious. But by removing the diſeaſed part, the cauſe of contamination ſeemed to be taken away, and the ſore healed. It is however ſingular, that the ſore which had been touched with cauſtic ſhould heal, while others of a ſpreading diſpoſition broke out in different parts of the body. Mr. Hunter ſaid he had ſeen ſuch ſores before, where this kind of inflammation with reſpect to the parts affected, reſembled the ſmall-pox with reſpect to the conſtitution, which having once undergone the action

of the poiſon, loſt the diſpoſition to this action. This opinion was ſtrengthened by the ſmall iſlands, if I may ſo expreſs myſelf, which had healed in the centre of the ſore, while the circumference continued to ſpread.

A caſe ſomewhat reſembling this occurred laſt year in Philadelphia. Dr. Phyſick had taken up a ſimilar idea of the mode of cure, and had applied the lapis ſcepticus to a very extenſive ſpreading ulcer. The ſucceſs in this caſe alſo, was equal to the expectation formed.

The ſummary then of my idea of Gangrene and Mortification is, that it is the total extinction of the life of a part. That it is of two kinds, one without inflammation, the other preceded by it. The firſt is the conſequence of the circulation being ſtopped, and of great violence. The treatment of this kind is the moſt ſimple, the powers of the animal machine being for the moſt part ſufficient to remedy the diſorder. Of the ſecond kind, or mortification preceded by inflammation, there are two ſpecies. The firſt is produced by the action of inflammation exceeding the powers of the part to ſupport; and the treatment conſiſts in preſerving the equilibrium between the powers and action. The ſecond ſpecies is the conſequence of a ſpecific inflammation, which is to be

treated by medicines experience has proved capable of counteracting the peculiar diſeaſed action, or by ſeparating the contaminated part from the ſound.

FINIS.